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fied from them by passing through a solution of bleaching powder, which readily oxidizes them. The amount of acetylene furnished per kilogram of commercial calcium carbide should be not less than three hundred liters. According to Fuchs and Schiff in the *Chemiker-Zeitung*, two samples of the Neuhaüser carbide gave, the one 286.8, and the other 297.6 liters per kilo.

J. L. H.

#### SCIENTIFIC NOTES AND NEWS.

##### SURVEYS OF FOREST RESERVES.

IN response to a resolution adopted December 15th, the Secretary of the Interior has transmitted to the Senate a report, prepared by the Director of the U. S. Geological Survey, of the operations of the survey in carrying out those provisions of the last Sundry Civil Act which relate to the survey of the public lands which have been or may hereafter be designated as forest reserves.

The report goes into the subject of organization of the work under the several branches, the characters of the land to be surveyed, progress and results, etc. To the date of the report more or less work had been done in nine reserves—the Black Hills, the Big Horn, the Teton, the Uinta, the Bitterroot, the Priest River, the Washington, the Lewis and Clarke, and the Flathead. The work consists of (1) a topographic and subdivision survey, and (2) an economic examination of the forests of the areas. The surveys comprise base-line measurement, triangulation, detailed topography, including the sketching of all timber areas on the map, leveling and the placing of permanent bench-marks, and land subdivision surveys. The examination of the forests comprises the study of the distribution of forest areas and woodlands, the size and density of the timber, and the distribution of species, the ravages of forest fires, the extent of pasturage and its effects and the extent of timber already cut. The report shows that the progress made in the work as a whole was not as great as had been anticipated, this being especially true of the surveys, and also that a large proportion of the appropriation is still unexpended. There are

two reasons why the progress has not been greater: first, the fact that the work was not started until very late in the season and was thus greatly hampered by storms and cold; and, second, the extremely rugged and density-timbered character of the country under survey. Professor Walcott reports in detail the progress made in the few weeks in which work was done. It is hoped, with the coöperation of Congress, to resume operations early in the spring and make a full season in these reserves.

W. F. M.

##### GENERAL.

THE Bruce gold medal of the Astronomical Society of the Pacific Coast has been awarded to Professor Simon Newcomb, of Washington, D. C., for his distinguished services to astronomy. This is the first award of the medal, to the establishment of which we some time since called attention.

REPRESENTATIVE WHEELER, of Alabama, has introduced a joint resolution to fill the vacancies in the Board of Regents of the Smithsonian Institution by the appointment of Mr. Alexander Graham Bell, to succeed Mr. Gardiner G. Hubbard, deceased, and the reappointment of Mr. John B. Henderson and Mr. Wm. Preston Johnston, whose terms expire January 26th.

M. WOLF succeeds M. Chatin as President of the Academy of Sciences, Paris, while M. Van Tieghem, the botanist, has been elected Vice-President in the place of M. Wolf.

AT its meeting on January 12th the American Academy of Arts and Sciences elected John M. Coulter, of Chicago, and Douglas H. Campbell, of Palo Alto, as Associate Fellows in the Section of Botany, and Elias Metschnikoff, of Paris, as Foreign Honorary Member in the Section of Zoology and Physiology.

A BANQUET in honor of Professor Virchow's fiftieth anniversary as a university teacher and as editor of the *Archiv für pathologische Anatomie* was given at Berlin on December 28th. Speeches were made on Professor Virchow's services as a teacher and man of science by Professors Waldeyer and Liebreich, and Professor Virchow replied.

THE memorial meeting in honor of the late

Gardiner Greene Hubbard was duly held in Washington on January 21st, in accordance with the arrangements that we had previously announced. Mr. Alexander Graham Bell presided, and addresses were made in behalf of the different institutions and scientific movements in connection with which Mr. Hubbard was prominent. The speakers were Surgeon-General George M. Sternburg; Professor S. P. Langley; President W. L. Wilson, of Washington and Lee University; President B. L. Whitman, of Columbian University; President D. C. Gilman, of Johns Hopkins University; Dr. Marcus Benjamin, Major J. W. Powell, Mr. A. W. R. Spofford and General A. W. Greely.

WE regret to record the following deaths among men of science: Professor Ernst Ludwig Taschenberg, known for his contributions to popular economic entomology on January 20th, at the age of seventy-nine years; Dr. Necker, Privatdocent in astronomy at Königsberg, who died at Cairo, as the result of an accident on December 23d, aged thirty years; and M. Ernst Bazin, inventor of the roller steamer, for which much has been claimed.

CABLEGRAMS to the daily papers report that the weather was extremely favorable for the various parties observing the total eclipse of the sun in India on January 22d. Fuller information must be awaited before any details can be given, but it is expected that the photographic results will be especially valuable.

THE German Association of Men of Science and Physicians will this year hold its annual meeting in Leipzig, under the presidency of Professor Waldeyer.

A LOCAL reception committee has been formed in Cambridge for the fourth International Congress of Zoology, which opens on August 23d, with Professor Newton as chairman and Mr. Adam Sedgwick as vice-chairman.

THE International Fishery Congress convened at Tampa, Fla., on January 19th, with delegates from nearly all the States and from several foreign countries in attendance. There were present a large number of men of science, and important papers were promised in the program. We hope to give, in a subsequent number, a report of the scientific work of the Congress.

THE following item from the *Martinsburg Democrat* should be of interest to the President of the United States and to Senator Elkins: "Between the hours of 8 and 9 o'clock on Tuesday night last, people residing in the neighborhood of King and Raleigh streets were startled by a war of words between George M. Bowers and his brother, John S. Bowers, who are not on amicable terms. The wordy contest soon resulted in a fisticuff, in which a severe wound was inflicted by George M. Bowers upon his brother, extending almost from ear to ear. So severe was the injury that the services of Dr. Morison were required to dress the wound, as the injured brother bled profusely. No arrests were made. This is the same gentleman who is a candidate for Fish Commissioner of the United States."

THE Committee of the French Chamber of Deputies appointed to consider the organization, at the Exposition of 1900, of a section for universities and high schools has reported, urgently recommending such a section, to be called 'Section of Science and Letters.'

THE Geological Society of London will this year award its medals and funds as follows: The Wollaston medal to Professor F. Zirkel; the Murchison medal and part of the fund to Mr. T. F. Jamieson; the Lyell medal and part of the fund to Dr. W. Waagen; the balance of the Wollaston fund to Mr. E. J. Garwood; the balance of the Murchison fund to Miss J. Donald; the balance of the Lyell fund to Mr. Henry Woods and Mr. W. H. Shrubsole; and a part of the balance of the Barlow-Jameson fund to Mr. E. Greenly.

AT a meeting of the managers of the Royal Institution, held on January 6th, Professor E. Ray Lankester was elected Fullerian professor of physiology in the place of Professor Waller. If nothing has interfered with the program Professor Lankester began on January 18th a course of eleven lectures at the Institution on the 'Simplest Living Things.' On January 20th Professor Dewar will deliver the first of a course of three lectures on the 'Halogen Group of Elements,' and on January 22d Professor Patrick Geddes began a course of three lectures on 'Cyprus.' The Friday even-

ing meetings of the members were to be resumed on January 21st, when Sir John Lubbock, Bart., M.P., delivered a discourse on 'Buds and Stipules.'

THE subjects and dates of the lectures to be given at the Teachers' College, New York, by Professors James and Shaler, of Harvard University, have now been arranged as follows: Professor James will lecture on 'The Gospel of Relaxation,' at 3:30 p. m., on January 28th, and Professor Shaler on 'The Use of the Environment in Education,' at noon on February 19th.

THE Scientific Society of Bridgeport, Conn., has been given a large collection of birds and cells gathered some time ago by Rev. Mr. Linsley.

It is stated in the *Athenæum* that MM. H. Lachambre and A. Machuron are going to issue an illustrated account of the making and equipping of M. Andrée's balloon and of his first attempt to start in 1896, which was frustrated by bad weather, as well as of his actual disappearance into the unknown in 1897. The authors accompanied M. Andrée to Spitzbergen, the one in the former year, the other on the later occasion. The book, which contains a brief biography of M. Andrée, is to be published in England by Messrs. Constable. The same firm is to bring out Mr. Trevor Battye's new book, 'A Northern Highway of the Czar.'

MESSRS. A. & C. BLACK will publish the lectures given by Dr. D. H. Scott at University College, London, last year, under the title 'Studies in Fossil Botany.'

THE *American Journal of Pharmacy* has issued an appeal for subscriptions in the United States towards a fund for the erection of statues in Paris to M. Pelletier and M. Caventon, the discoverers of quinine and strychnine.

DR. ELLIOTT COUES has been offered a position on one of the committees of the forthcoming International Zoological Congress, and intends being present at Cambridge.

THE U. S. Civil Service Commission announces that an examination will be held on February 23, 1898, at Washington, D. C., and other places throughout the United States for the position of assistant microscopist in the Department of Agriculture. This examination will consist of a very light educational test, together

with practical questions on the use of the microscope. The microscopical inspection service under the Department of Agriculture has been greatly extended, and vacancies are to be filled in sixteen different cities. Only women are eligible for this position.

THE American Geographical Society held its annual meeting on January 17th, at Chickering Hall, New York, when the following officers were elected by unanimous vote: Ex-Judge Charles P. Daly, President, to act for one year; Egbert L. Viele, Vice-President, to act until 1901; W. R. Jones, Treasurer, to act until 1899; Anton A. Raven, Recording Secretary, to act until 1901; L. Holbrook, M. K. Jessup, Gustav A. Kissell, John A. Haddon and Henry Paush. Rev. Dr. C. C. Tiffany presided over the meeting. Forty-eight new members were elected, bringing the membership up to 1,187. The committee appointed to consider the erection of a new building reported that, while the present building at No. 11 West 29th Street is too small, the funds of the Society would not permit of the erection of a new building at the present time.

UNSUCCESSFUL attempts have been made in St. Louis and in Milwaukee to repeat the operation of total exsection of the stomach, successfully carried out by Dr. Schlatter.

THE bubonic plague continues unabated in India; influenza is epidemic in London, and there has been a serious outbreak of typhoid fever in Philadelphia, due, it is thought, to the breaking of a sewer and the emptying of its contents into the water supply of the city.

THE St. Petersburg Institute of Experimental Medicine held its annual meeting on December 20th, at which an address on the bubonic plague was delivered by M. Wladimiroff, and a report was presented by the Director of the Institute, Dr. Lukjanoff. It was stated that 120 persons had been engaged in research at the Institute, and that sixty-five investigations had been published. Three hundred and sixty-three persons had been treated for hydrophobia by antirabic inoculations, with a mortality of 0.7 per cent. and 25,000 tubes of anti-diphtheria serum had been supplied.

As we have already announced, the ninth

International Congress of Hygiene and Demography will be held at Madrid from April 10th to April 19th. The hygienic work of the Congress will be divided among ten sections, as follows: Microbiology in Relation to Hygiene; Prophylaxis and Transmissible Disease; Medical Climatology and Topography; Urban Hygiene; Hygiene of Alimentation; Hygiene of Infancy and of Schools; Hygiene of Exercise and Labor; Military and Naval Hygiene; Veterinary Hygiene, Civil and Military; Sanitary Architecture and Engineering. The part of the work relating to Demography will be divided among three sections, as follows: Technics of Demographic Statistics; Statistical Results in Relation to Demography; Dynamical Demography (movements of population, etc). The Secretary-General of the Congress is Dr. Amalio Gimeno y Cabañas, professor of hygiene in the University of Madrid, and the President of the Executive Committee is Professor Julian Calleja.

THE want of an independent water supply for the Zoological Gardens of London has been felt for many years by this institution, and recently it was decided to put down an artesian bored tube well. The results have been, as was anticipated, the tapping of powerful springs of pure water in the chalk at the depth of 450 feet, yielding 240,000 gallons per day.

A DEPARTMENT for hydrophobia—similar to the Pasteur Institute in Paris—is to be added to the Institute for Infectious Diseases in Berlin, of which Robert Koch is Director.

A DISPATCH to the daily papers from Montreal states that Mr. McCreary, the Immigration Commissioner, has taken over the herd of buffaloes which Lord Strathcona has presented to the Dominion government, to be placed in the National Park at Banff. There are seventeen animals in the herd, all thoroughbreds but one. The herd will be kept at Silver Heights, Lord Strathcona's estate, near Winnipeg, until April, when they will be sent to Banff, where they will be placed in an enclosure of forty acres, now being prepared for them.

BEFORE the members of the Drawing Room at the Waldorf-Astoria, Professor Willis L. Moore, Chief of the U. S. Weather Bureau,

recently delivered a lecture, in which, according to report in the New York *Tribune*, he pointed out that the practical application of science to the industry of the world was nowhere more fitly illustrated than in the extensive and various uses made of the present weather service of the United States. Briefly referring to some of the more striking instances of the Bureau's utility, its Chief showed that the great raisin interests of California cured their fruit according to the weather reports, and nearly all the important vineyards were in telephonic communication with some central point from which forecasts of rain were distributed. On the high plains of Montana, Colorado and the western slope, Mr. Moore continued, the vast cattle interests herded their flocks on the first warning of a coming blizzard, and hundreds of cattle were annually saved by reason of the forewarning of the greater number of destructive cold waves. On the Great Lakes the destruction of life and property was but a small percentage of what it was fifteen years ago, due to the fact that to-day the mariners were students of the weather map, and the warnings of the Weather Bureau accurately foretold nearly all storms destructive to commerce.

A TABLE has been prepared by Rev. C. T. Ward, of New York, showing the amount of money left for benevolent purposes by testators throughout the United States during the past three years. The bequests amounted to \$14,374,800 in 1897, \$13,112,300 in 1896 and \$9,401,500 in 1895. The money bequeathed for educational purposes last year amounted to \$5,292,200.

PROFESSOR W. L. ELKIN, Director of the Observatory of Yale University, in his annual report for the year 1896-7, states that while in Europe in 1896 he purchased a third Voigtländer lens and one by Hermagis, both of six inches aperture, and since his return has procured two other similar ones of American make, thus making six cameras available on the mounting. The cost of all three of the Voigtländer lenses has been generously defrayed by Cyprian S. Brainerd, Esq. Five lenses were put in use in August last and eight meteor trails, five of them Perseids, were secured. The

November and December periods were, however, unproductive this year. Dr. Elkin has employed a considerable part of his time in the measurement and discussion of the photographic trails of the Perseids thus secured, now numbering 17 in all. So far, the results are not very conclusive as to the character of the radiant, but as each year will add to the data there seems good reason to hope ultimately for most valuable deductions. Mr. John E. Lewis has rendered valuable cooperation in this work, though he did not secure any trails at Ansonia. During the winter a portion of the work on the parallaxes of the ten first magnitude stars in the northern hemisphere, comprising the observations and reductions, was passed through the press. Dr. Chase was absent in Europe on leave from July, 1896, to January, 1897. Since his return he has taken up the Heliometer work on the parallaxes of large proper motion stars. During his absence the time service was under the care of Mr. George K. Lawton until October, 1896, and subsequently under that of Dr. B. W. McFarland. Dr. Palmer has been engaged in computations, mainly of refraction corrections and tables therefor. Miss Newton has been occupied in preparing a series of references to other catalogues in an interleaved copy of the Bonn Durchmusterung.

MR. T. WHITBURN, the President of the Guildford Natural History and Microscopical Society, writes to the *London Times* to say that on August 23d he addressed a letter to the African explorer and naturalist, Mr. F. C. Selous (who has a residence and museum near Guildford), informing him of the proposed petition for the preservation of Wolmer, and requesting his support. He also inquired if Mr. Selous would join the Society as an honorary member. The reply of Mr. Selous is as follows: "Allan Line Royal Mail Steamers.—Steamship *Laurentian*, Dec. 11, 1897.—Dear Sir.—I have been away in the Rocky Mountains, and only received your kind letter of August 23d the other day, on my return to Canada, on my way home. Although I have killed a great many wild animals, I have never destroyed life wantonly, and I think that I can fairly claim to be more of a naturalist than a sportsman. Besides having secured some

very fine specimens of African big game for the South Kensington and South African Museums, I have also made large collections of butterflies and beetles (amongst which were many new species), all of which are now in the South African Museum at Cape Town. I trust that your Society will be successful in securing Wolmer Forest as a sanctuary for wild birds and animals, and I shall be very pleased to have my name added to your requisition. I shall also consider it a great honor to be made an honorary member of your Society, and will try and get in touch with you as soon as I come to live at Worplesdon, as I shall do sooner or later. Believe me, dear sir, yours very truly, F. C. SELOUS."

ACCORDING to the *Electrical World*, the value of the instruments and machinery during 1897 for scientific purposes exported from the United States was \$3,054,453, which was an increase of half a million dollars as compared with the exports in 1896.

A GENERAL meeting of the Aëronautical Society of Great Britain, at which Sir Charles Warren presided, was held in the rooms of the Society of Arts on December 16th, when several forms of flying machines were exhibited and described. The report in the *London Times* states that Major Moore showed a machine in which he aims at reproducing the motions of a bird in flight, and Mr. S. Bruce explained how his signalling balloons might be found useful to Arctic explorers. The application of kites to the preservation of life was illustrated by the apparatus of Captain Spiers, who considers that the simplest way of carrying a line from a wrecked ship to the land is by means of a kite. Captain Baden-Powell, the Secretary of the Society, exhibited a specimen of the kites he employs for man-lifting purposes. He said that as a rule four or five kites 12 feet long were sufficient to lift a man, though in a very strong wind he had been raised off his feet by one. In America kites had been used for meteorological purposes, and experiments had been made with them for military purposes. He thought it a pity they had not been employed in the operations in India. Mr. Pilcher showed one of his soaring machines in which

he had been able to cover nearly 300 yards. He is now at work on a four-horse power oil engine, to weigh about 40 pounds, which he intends to fit together with a five-foot screw propeller to one of these machines; he hopes then to have a genuine flying machine. Captain Baden-Powell described an aluminum balloon, fitted with a Daimler oil-motor, which had recently been tried at Berlin with somewhat qualified success, and after a few remarks from the chairman on the military aspects of flying machines, the proceedings terminated with a vote of thanks to those who had brought forward exhibits.

#### UNIVERSITY AND EDUCATIONAL NEWS.

PRESIDENT HARPER says in his twenty-first quarterly statement that it is the custom of the Board of Trustees to arrange for the expenditures of a particular year six months before the beginning of that year. In accordance with this custom the Trustees, on December 29th, voted the budget for the year beginning July 1, 1898. The assured income of the University from all sources was estimated at \$529,000. In addition to this amount the founder of the University, Mr. Rockefeller, has been kind enough to designate, under certain conditions, the sum of \$200,000, making in all \$729,000. The expenditures of the various divisions of the University and of the various departments have been adjusted to this estimated income. The sum of \$25,000 has been set apart as a contingent fund and the remainder is distributed as follows:

Administration and General Expenses, ..	\$72,875
Faculty of Arts, Literature and Science,	347,767
The Divinity School, .....	49,516
The Morgan Park Academy, .....	37,120
University Extension Division, .....	41,064
Libraries, Laboratories and Museums, ..	44,615
Printing and Publishing, .....	41,560
Physical Culture, .....	7,500
Affiliated Work, .....	3,000
Buildings and Grounds, .....	59,425

THE number of graduate students in arts and science in several leading universities are given by the *Harvard Graduates' Magazine* as follows: Harvard, 268; Yale, 254; Johns Hopkins, 220, and Columbia, 207. The number at Chicago appears from President Harper's recent state-

ment to be larger than in any other American university, namely, 324, of which 202 are men and 122 are women.

DURING the present winter semester the registration of regular students in Berlin University amounts to 5,921. This is the largest registration in the history of the University, being 400 in excess of last winter.

PROFESSOR JAMES E. RUSSELL, of the department of Education in the Teachers' College, New York, has been appointed Dean of the College and will, with Dr. F. S. Baker, of the department of English, represent the College on the Council of Columbia University.

THE Academy of Sciences, Paris, has recommended M. C. Chatelier, professor of chemistry in the School of Mines, and M. Joannis, lecturer at the Sorbonne, as candidates for the chair of mineralogical chemistry in the Collège de France, vacant by the death of M. Schützenberger.

M. GUIART has been given charge of the practical work in natural history under the Faculty of Medicine in the University of Paris.

MR. ALFRED HOPKINS, Q.C., M.P., has been elected Principal of Owens College, Manchester, in succession to Dr. Ward, resigned. Mr. Hopkins has announced his attention of retiring from Parliament.

DR. JULIUS ISTVÁNYFY has been appointed professor of botany in the University of Klausenburg, and Dr. Alexander Mágocsy-Dietz associate professor of botany in the University of Budapest. Dr. Ambronn and Dr. Rhumbler, docents in astronomy and zoology in the University of Göttingen, have been promoted to professorships. M. Benard has been appointed assistant in physics at the Collège de France, succeeding M. Maurain.

#### DISCUSSION AND CORRESPONDENCE.

##### CLIMATIC CONTRASTS ALONG THE OROYA RAILWAY.

TO THE EDITOR OF SCIENCE: Much has been written concerning the wonderful engineering necessary in order to construct the Oroya Railway, and concerning the scenery along its line, and every one is more or less